Photonics for Innovation
An Excelitas Technologies Company

iFLEX-iRIS™
Laser systems with fiber delivery

The Qioptiq iFLEX-iRIS™ solid state laser systems offer high performance stability with low amplitude noise in a miniaturized package. They are ideally suited for integration into instruments that demand high performance yet need to retain a small form factor. The lasers are mode-hop free and wavelength stabilized as a result of active temperature control.

All CW iFLEX-iRIS lasers operate in automatic power control mode using an internal feedback loop. This feature provides highly stable output power, and ensures the high power stability performance is maintained throughout the product lifetime.

Well controlled digital modulation can be offered through the electrical interface PINs. This feature must be selected with order.

Increased freedom of design and ease of servicing is offered with the detachable kineFLEX® single-mode polarization maintaining fiber delivery system. Fiber may be selected with order or fitted by customers as a later upgrade option, to iFLEX-iRIS lasers with a centralised output beam. This detachable fiber delivers true "Plug & Play" design freedom.

Some of the product features include: Product features include:

- High stability operation
- High beam quality
- Low noise
- Miniaturized size for easy integration
- Integrated electronics and TEC temperature stabilized control
- Conductively cooled through baseplate
- Mechanical shutter
- Electronic shuttering

Options include:

- Over 100 standard single-mode polarization maintaining fiber delivery options using the detachable kineFLEX
- Digital modulation
- CDRH compliant interlock unit
- Adaptor cable when an iFLEX-iRIS is used as a retrofit replacement for an iFLEX2000™ laser
- Industry compatible footprints and beam exit positions
- OEM laser versions on request
- OEM fiber versions on request

iFLEX-iRIS specification overview

Operating Wavelengths

Wavelength (nm)	375	405	445	450	458	473	488	515	520	633	640	660	670	730	780	830	852	nm
Power from laser (mW)	15, 20, 50	50, 100, 150, 220	20, 30, 75	30, 75	20	75	20, 50, 100, 120	20, 60	30, 75	30, 75	20, 50, 80	20, 50, 80	10	20	15, 50	20, 50, 80	40	mW
Power after fiber output (mW)	10, 30	30, 50, 100, 150	20, 50	20, 50	20	50	20, 50, 80	40	20, 50	20, 50	20, 50	20, 50	6	10	10, 30	20, 50	30	mW

Technical Specifications

Laser parameters		
Center wavelength	± 5	nm
Power stability (8 hours)	< 1	%
Optical Noise (20Hz-2MHz)	< 0.1*	% rms
Beam diameter at $1/e^2$	0.7	mm
Polarization ratio	> 100:1	-
Electrical		
Power supply	12V DC, 1A	-
Max. base plate temp.	40	°C
Max. heat dissipation	12	W
Operation Modes		
CW	0 - 100% power adjustment	
Digital Modulation	TTL signal	-
Rise time (10% to 90%)	< 1	µsec
Fall time (90% to 10%)	< 1	µsec
Modulation bandwidth	500	kHz
Laser Dimensions		
Laser only	70(L) x 40(W) x 38(H)	mm
Laser with kineMATIX®	1142(L)x **51(W)x **51(H)	mm

Fiber parameters		
Fiber length	1 to 3	m
Fiber jacket	Stainless steel, 5mm OD	
Fiber type	Single-mode polarization maintaining	
Collimated fiber output beam		
Beam diameter	0.7mm	mm
M squared	typ 1.1	-
Pointing stability	≤ 1	µrad/°C
Beam divergence	Diffraction Limited	
Mechanical dimensions	Ø12 x 50	mm
Beam position	≤ ± 0.15	mm
Beam angle	≤ ± 0.5	mrad
Connectorized output beam		
Single-mode polarization maintaining fiber	FCP (polarization keyed), FCP8, APC (polarization keyed and 8 degree polished)	
Environmental conditions		
Storage temp.	10 to 50	°C
Operating pressure	Atmospheric	-
Operating temp.	10 to 40	°C
Operating humidity	Non-condensing, dew point <20°C	

*Model specific please contact Qioptiq for details
**Full extension travel on kineMATIX adjustment screws. Typical setting is 48.5mm(W) x 48.5(H)

Custom OEM versions on request

iFLEX-iRIS specification overview

Operating Wavelengths: 532nm & 561nm

Wavelength (nm)	532	561
Power from laser (mW)	20, 40	20, 40
Power after fiber output (mW)	30	30

Technical Specifications

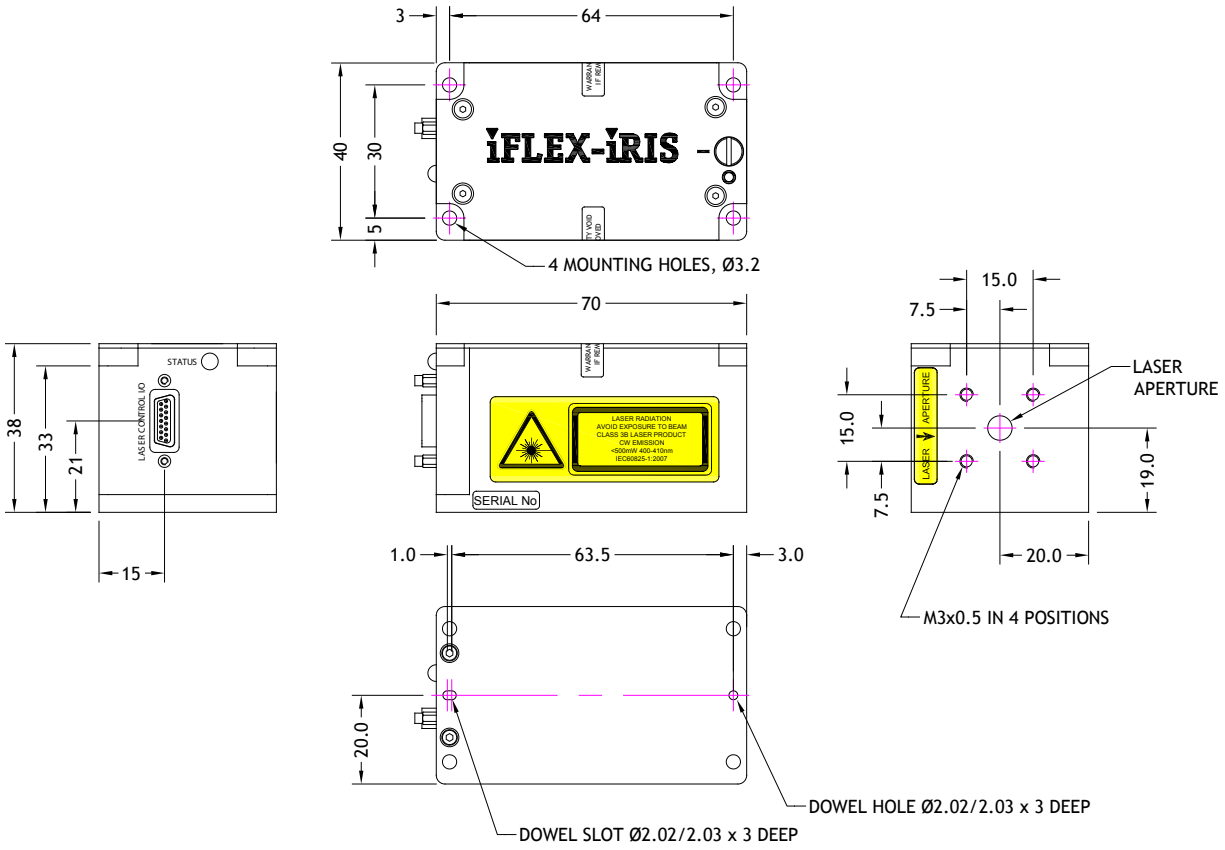
Laser parameters		
Center wavelength	± 2	nm
Power stability (8 hours)	< 2	%
Optical Noise (20Hz-2MHz)	< 0.3*	% rms
Beam diameter at $1/e^2$	0.7	mm
Polarization ratio	> 100:1	-
Electrical		
Power supply	12V DC, 1A (laser)	-
Max. base plate temp.	40	°C
Max. heat dissipation	12	W
Operation Modes		
CW	50 - 100% power adjustment	
Laser Dimensions		
Laser only	70(L) x 40(W) x 38(H)	mm
Laser with kineMATIX®	142(L) x 51**(W) x 51**(H)	mm

*Model specific please contact Qioptiq for details
**Full extension travel on kineMATIX adjustment screws. Typical setting is 48.5mm(W) x 48.5(H)
Custom OEM versions on request

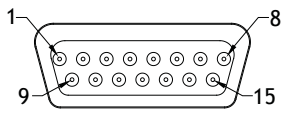
Fiber parameters		
Fiber length	1 to 3	m
Fiber jacket	Stainless steel, 5mm OD	
Fiber type	Single-mode polarization maintaining	
Collimated fiber output beam		
Beam diameter	0.7mm	mm
M squared	typ 1.1	-
Pointing stability	≤ 1	µrad/°C
Beam divergence	Diffraction Limited	
Mechanical dimensions	Ø12 x 50	mm
Beam position	≤ ± 0.15	mm
Beam angle	≤ ± 0.5	mrad
Connectorized output beam		
Single-mode polarization maintaining fiber	FCP (polarization keyed), FCP8, APC (polarization keyed and 8 degree polished)	
Environmental conditions		
Storage temp.	10 to 50	°C
Operating pressure	Atmospheric	-
Operating temp.	10 to 40	°C
Operating humidity	Non-condensing, dew point <20°C	

(1) iFLEX-iRIS laser with centralized beam exit position

Note: it is possible to attach a kineFLEX fiber delivery system to the iFLEX-iRIS laser with centralized beam exit position. The kineFLEX can be attached by customers, as a future upgrade option.



iFLEX-iRIS electrical interface

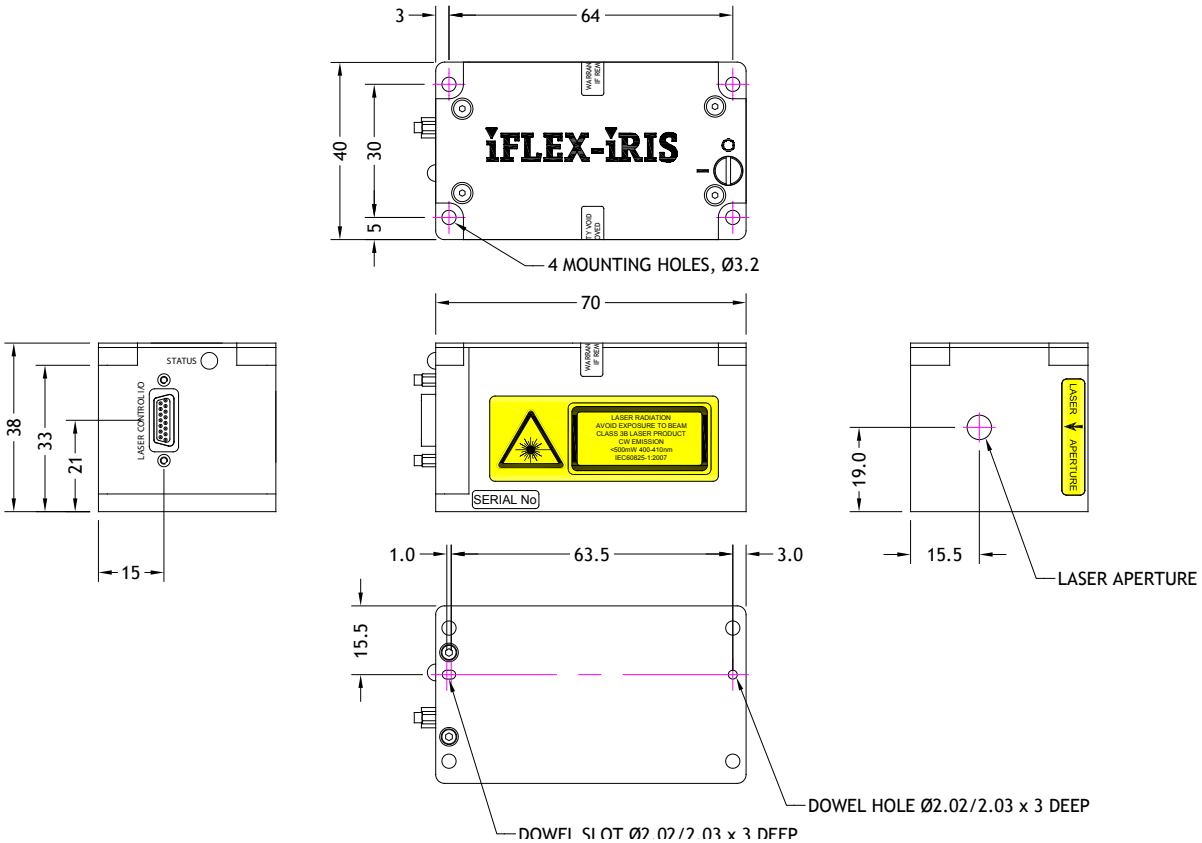


Pin	Function
1	Monitor Photodiode Output (Vmon)
2	Operating Current Output (Vop)
3	External Power Control
4	Laser Enable
5	Temperature OK Signal
6	Reserved
7	Laser Supply Voltage
8	Reserved
9	Reserved
10	Reserved
11	Chassis Ground
12	Digital Modulation Input
13	Reserved
14	0V Laser Supply
15	0V Signal Return

Please refer to iFLEX-iRIS user manual for detailed instructions on electrical control via PINs.

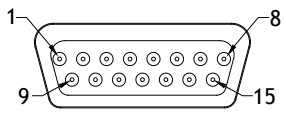
(2) iFLEX-iRIS laser with offset beam exit position

Note: the kineFLEX fiber delivery system cannot be fitted directly to the iFLEX-iRIS laser with offset beam exit position.



iFLEX-iRIS electrical interface

Other industry footprints and beam offsets may be available. Please contact Qioptiq Sales for details.



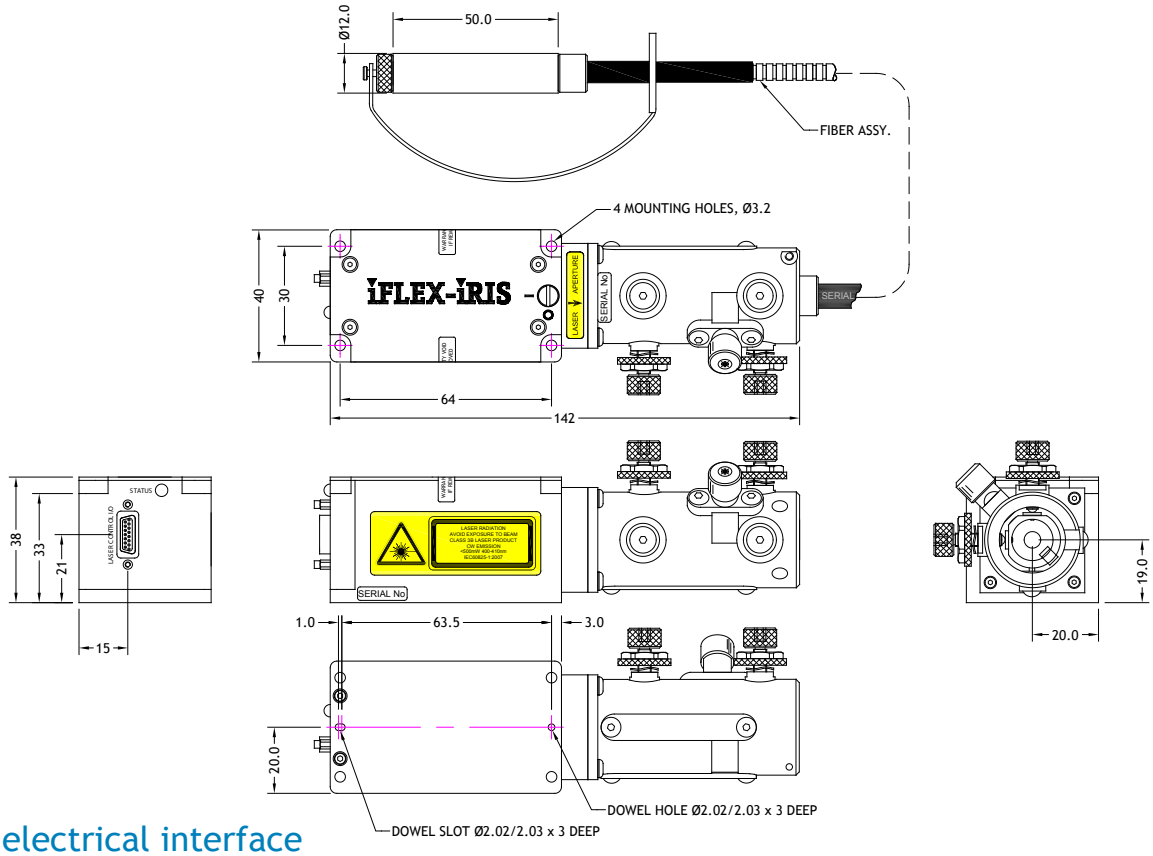
Pin	Function
1	Monitor Photodiode Output (Vmon)
2	Operating Current Output (Vop)
3	External Power Control
4	Laser Enable
5	Temperature OK Signal
6	Reserved
7	Laser Supply Voltage
8	Reserved
9	Reserved
10	Reserved
11	Chassis Ground
12	Digital Modulation Input
13	Reserved
14	0V Laser Supply
15	0V Signal Return

Please refer to iFLEX-iRIS user manual for detailed instructions on electrical control via PINs.

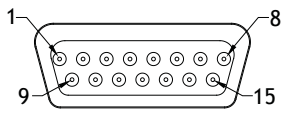
(3) iFLEX-iRIS laser with fiber coupled output

This iFLEX-iRIS includes a kineFLEX single-mode polarization maintaining fiber delivery system.

Please refer to the kineFLEX datasheet for full details of all standard options. Please contact Qioptiq Sales to discuss any customized outputs or beam shaping required.



iFLEX-iRIS electrical interface



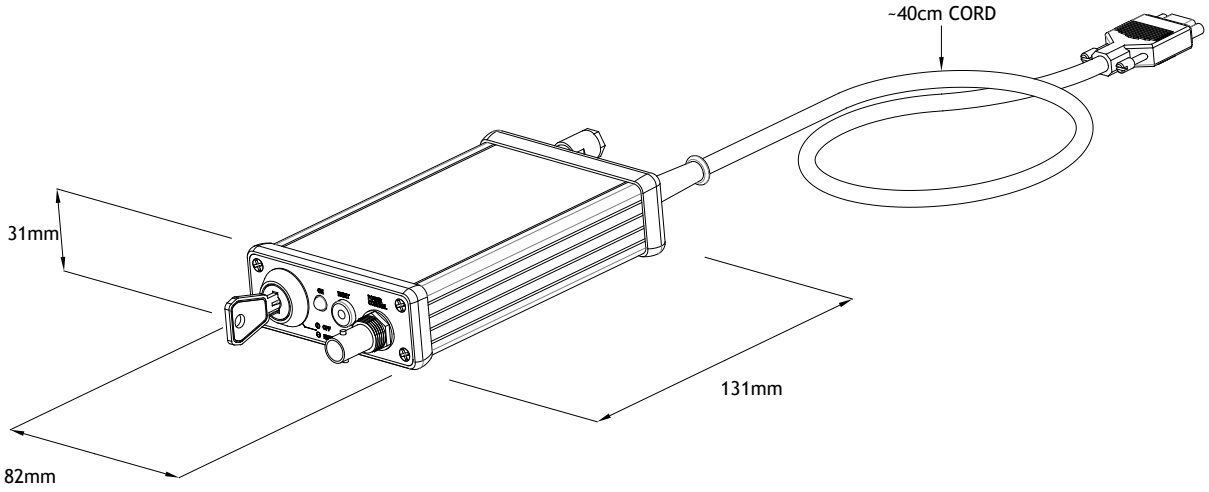
Pin	Function
1	Monitor Photodiode Output (Vmon)
2	Operating Current Output (Vop)
3	External Power Control
4	Laser Enable
5	Temperature OK Signal
6	Reserved
7	Laser Supply Voltage
8	Reserved
9	Reserved
10	Reserved
11	Chassis Ground
12	Digital Modulation Input
13	Reserved
14	0V Laser Supply
15	0V Signal Return

Please refer to iFLEX-iRIS user manual for detailed instructions on electrical control via PINs.

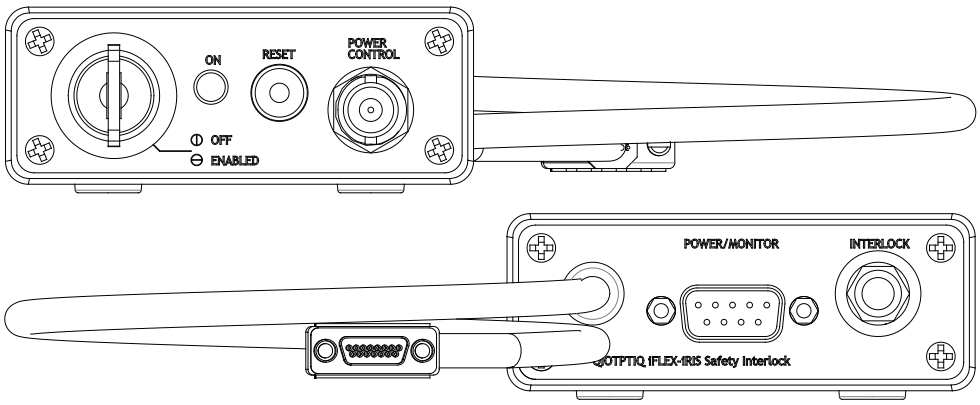
iFLEX-iRIS CDRH compliant interlock unit

For CDRH compliance a bench top standalone laser system must be used with a CDRH compliant interlock unit power supply. Qioptiq is pleased to offer this iFLEX-iRIS CDRH compliant interlock unit for use with the iFLEX-iRIS laser systems.

Note: The iFLEX-iRIS CDRH compliant interlock unit includes keyswitch, interlock plug, remote interlock switch and power supply. This CDRH compliant interlock unit is recommended for bench top use.

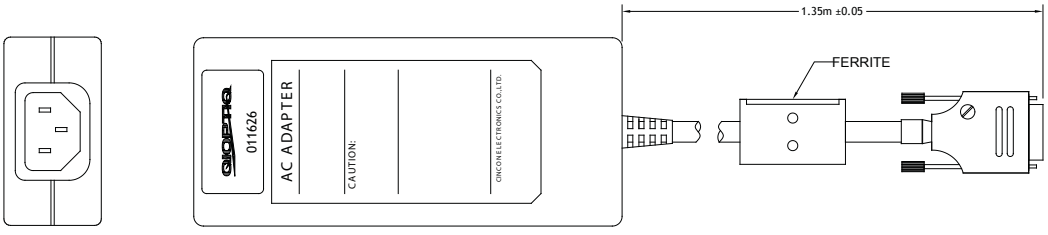


End panel views of the iFLEX-iRIS™ interlock control unit detailing the location of the different connectors and indicators



iFLEX-iRIS OEM power supply

When iFLEX-iRIS lasers are integrated into OEM instrumentation then power may be supplied directly from the instrument or from an OEM power supply. Qioptiq is pleased to supply this OEM power supply for the iFLEX-iRIS and iFLEX2000 laser systems.



iFLEX-iRIS Adaptor Cable

This allows an iFLEX-iRIS to be installed in place of an iFLEX2000, as a retrofit laser system.

iFLEX-iRIS Order Codes

iFLEX – iRIS – X0 - [ ] - 0.7 - [ ] - [ ]

Laser Wavelength (nm)

Beam Diameter (mm)

Laser Power (mW)

Operating mode (CW = NP, Digital modulation = T)

iFLEX – iRIS – X2 - [ ] - 0.7 - [ ] - [ ]

Laser Wavelength (nm)

Beam Diameter (mm)

Laser Power (mW)

Operating mode (CW = NP, Digital modulation = T)

iFLEX - iRIS - P - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

SM PM Fiber type

Fiber length (m)

Laser Wavelength (nm)

Fiber output (0.7mm, FCP, FCP8 or APC)

Laser power after fiber (mW)

Operating mode (CW = NP, Digital modulation = T)

These lasers are designed and manufactured in a factory with ISO9001:2008 certification. These lasers are CE certified. These lasers meet the requirements for IEC60825. Only lasers used with the CDRH compliant interlock unit meet CDRH requirements. The fiber optic output can increase laser hazard. Please follow recommended laser safety guidelines when using these lasers. iFLEX-iRIS-P is the iFLEX-iRIS laser with kineFLEX fiber delivery including kineMATIX-P2 fiber coupler.

For technical information contact:

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